HIV AND INFECTIOUS DISEASE CARE IN JAILS AND PRISONS: BREAKING DOWN THE WALLS WITH THE HELP OF ACADEMIC MEDICINE

TIMOTHY P. FLANIGAN and (*by invitation*) NICKOLAS ZALLER, LYNN TAYLOR, CURT BECKWITH, LANDON KUESTER, JOSIAH RICH, CHARLES C.J. CARPENTER

PROVIDENCE, RHODE ISLAND

ABSTRACT

Health care within correctional facilities has traditionally been marginalized from excellence in academic medicine. The armamentarium of a medical school, which includes excellence in research, teaching and clinical care, can be successfully applied to the correctional setting both in the United States and internationally. At any one time, there are over 2 million people incarcerated in the US who are disproportionately poor and from communities of color. Rates of human immunodeficiency virus (HIV) and hepatitis C virus infection (HCV) in prisons are 5 and 17–28-times higher than in the general population, respectively. The correctional setting provides an excellent opportunity to screen for and treat sexually transmitted infections (STIs), HIV, HCV, chronic hepatitis B virus (HBV) infections and tuberculosis (TB) and to develop effective prevention programs.

In Rhode Island, the collaboration between The Alpert Medical School of Brown University and the Rhode Island Department of Corrections (RIDOC) has been a model program to address the HIV epidemic in the state. In the first ten years of testing, a third of all HIV positive tests within the state originated from the correctional setting. Several federally funded clinical research programs have led to the development of linkage to care programs which have resulted in approximately 90% of HIV-infected persons accessing HIV primary care in the community upon release from prison. Additionally, we have demonstrated that prevention case management results in decreases in sexual risk taking behavior upon release from prison among young men. Screening for STIs has also been shown to be feasible and ac-

Correspondence and reprint requests: Timothy P. Flanigan, MD, The Warren Alpert Medical School of Brown University and The Miriam Hospital, 164 Summit Avenue, Providence, RI 02906, Tel: 401-793-7153, Fax: 401-793-4049, E-mail: tflanigan@lifespan.org.

Potential Conflicts of Interest: None disclosed.

ceptable in a variety of correctional settings, both locally and nationally. Because over 95% of incarcerated individuals are eventually released back into the community, these programs can effectively impact the further spread of infectious diseases. By developing collaborative research, education and clinical care programs within prisons and jails, academic medicine has the opportunity to play a leading role in engaging and developing effective interventions in the arena of both infectious diseases and other illnesses that disproportionately affect poorer communities.

Over the last several decades, the number of persons incarcerated in the United States has been steadily increasing. Currently, over 2 million people are incarcerated at any one time, and there are approximately 10 million people who are jailed and released each year into the community ([1, 2]). HIV prevalence rates are consistently higher in correctional populations than in the community as are rates of HCV, HBV, STIs, and tuberculosis ([3]). It is estimated that almost one out of every four HIV-infected persons in the U.S. passes through the correctional doors each year, and one out of every three hepatitis C-infected persons is incarcerated over the course of a year, even if only for a brief period ([4]). Within the walls of our jails and prisons, there are co-occurring epidemics of these infectious diseases in combination with high rates of substance use and mental illness. The health of inmates needs to be viewed as a shared responsibility between the judicial system as well as community health and public health systems. The vast majority of inmates return rapidly to their communities and to their families. The well-being and health of families, neighborhoods and communities necessitates pro-active, effective approaches to provide appropriate health care within jails and prisons.

Traditionally, academic medicine has been largely uninvolved with correctional health care ([5]). Academic medicine has often underestimated the key connection between correctional medicine and community and public health. There has, understandably, been concern regarding security as well as logistical barriers, which has impeded collaborative research, educational and health care programs between medical schools and jails and prisons. Likewise, many correctional systems have not fully understood the potential benefits of partnerships with academic medical institutions, such as improving the quality of health care and providing valuable educational resources and new, innovative approaches to diagnosing and treating disease and illness in the correctional setting ([5]). This article demonstrates the mutually beneficial relationship between an academic medical center and the correctional facility in Rhode Island over a period of 15 years

and the impact that this has had on the local HIV epidemic. Recommendations are provided regarding future directions of collaboration.

THE RHODE ISLAND EXPERIENCE

In 1990, the Rhode Island Legislature mandated HIV testing in the state prison and jail facilities for all individuals convicted of a crime. Academic medical leaders within Rhode Island at Brown Medical School approached the correctional authorities and successfully advocated for HIV clinicians to provide on-site HIV care within the correctional facility. This began an alliance between the medical school and the correctional facility in which physicians working from a major community teaching hospital of The Alpert Medical School of Brown University provided on-site care and developed collaborative research programs to improve HIV testing and care programs within the correctional facilities and to develop linkage to community-based treatment of HIV, substance use and mental illness.

In Rhode Island approximately 2% of inmates are HIV infected [6]. Within 10 years (1989–1999) of initiating HIV testing within the correctional setting in Rhode Island, 33% of all the HIV positive tests within the state came from the prison system [7]. This was by far the single most important site for HIV testing within the state. Injection drug use (IDU) was the driving force for the HIV epidemic early on in Rhode Island; so it is not surprising that 43% of all HIV-positive IDUs identified in the state were diagnosed in the correctional setting. Additionally, 42% of African Americans, and 36% of men overall, were identified as being HIV positive at this one site [7]. HIV testing was offered at the time of incarceration irrespective of the inmate's perceived risk. Testing was routine and offered in an opt-out option, meaning that inmates were tested unless they specifically requested not to be. All inmates signed a consent form but no pre-test counseling was given (which was not optimal). Importantly, risk behaviors associated with HIV and STI acquisition were high, yet only one forth of men and one third of women considered themselves at risk for HIV infection [8]. Low perceived HIV risk was the norm rather than the exception [8, 9]. These data underscored the importance of HIV testing being offered in a routine fashion to all entrants to the correctional system. Targeted HIV testing based on self-perceived risk would have resulted in many HIV infected individuals remaining undiagnosed.

A subsequent pilot project evaluated rapid testing in the jail setting [9]. The results were encouraging, as rapid testing was accepted by 95% of inmates who preferred this method of testing due to the ability to

provide test results in a relatively quick time-frame (20 minutes) and at one setting. Ninety-six percent of participants surveyed thought that a correctional institution was a good place to offer routine HIV testing and 95% also said that they would be willing to go to a counselor to facilitate informing their contacts that they should be tested for HIV. On more specific questioning, 92% thought that partner notification utilizing a health counselor from the State Department of Health would be helpful. Currently, partner notification by trained counselors is not the standard in Rhode Island or in most high HIV prevalence states. Developing better partner notification protocols represents another important opportunity for collaboration between academic medicine, the correctional system and the state Department of Health. Our pilot study demonstrated that the new technology of rapid testing can provide significant benefits in jails throughout the country. Jails have rapid turnover rates, with most persons staying less than two weeks. Rapid testing allows for the provision of targeted pretest counseling and then the receipt of test results with a brief, individualized risk-reduction method. Rapid tests are now quite inexpensive, often costing less than $10 a test. Ongoing studies are looking at the routine implementation of rapid testing throughout the jail system, and a cost study comparing rapid testing to conventional HIV testing within the jail setting (10).

Routine HIV testing is only appropriate if comprehensive HIV clinical services are provided within the correctional facility after diagnosis (1). This has been accomplished in Rhode Island through the collaborative efforts of Alpert Medical School of Brown University in conjunction with the Department of Corrections. The advances of HIV care due to potent, combination anti-retroviral therapy has been extraordinary. In Rhode Island, we have seen a reduction in AIDS mortality rates similar to that being reported by New York State Dept of Corrections, where mortality rates fell by more than 80% from 1990 to 1998 (2, 11). Improved care, with state of the art laboratory testing and the provision of combination medications, led to drops in mortality within the correctional system that paralleled the drop in mortality in the community.

In Rhode Island correctional facilities, discharge planning for HIV-infected individuals has resulted in successful linkage to follow-up care in the community after release (12, 13). Medical care providers as well as a case management team consisting of a social worker and outreach worker initiate contact within the correctional setting and then follow inmates after release to the community. The focus of discharge planning is not just medical care, but also sub-

stance use treatment and linkage to other community-based services, including housing, mental health care, and community support as appropriate. The importance of initiating community linkages during incarceration cannot be underestimated. For many individuals, incarceration is a time of relative sobriety, albeit forced, when they focus on behaviors that may have contributed to their incarceration. Our HIV linkage project (Project Bridge) was part of a national program funded through Health Resources and Services Administration (HRSA). In the first three years of this program, 97 offenders were enrolled and 90% were followed for 18 months with ongoing HIV care. In addition, 67% were able to link with community-based substance use treatment. Despite ongoing substance use, it was possible to maintain HIV- positive ex-offenders in medical care through the provision of ongoing case management following prison release. Linkage to care has also resulted in decreases in recidivism rates. Among women released in RI with comprehensive follow-up, the 12 month recidivism rate decreased from 39% to 17% (14). This experience mirrors similar results from the Hamden County Correctional Center in Massachusetts. A two year follow-up of 162 HIV-positive former inmates who received discharge planning in Western Massachusetts had a recidivism rate of 46%, compared with 72% among the general population (15).

The Centers for Disease Prevention and Control (CDC) funded Project START, demonstrated that case management and HIV- specific counseling which focused on prevention could also decrease risk behaviors after release from prison. This study developed a case management-based intervention and was evaluated in Rhode Island as well as in three other states. The study incorporated motivational interventions and client-centered prevention case management that was initiated in prison and then continued in the community after release. Individuals who received the intensive intervention engaged in less unprotected vaginal and anal sex in the community after release (16).

The Alpert Medical School in conjunction with the RIDOC has also been successful in implementing HCV screening and treatment within the correctional setting. Of Americans with HCV, one-third pass through correctional settings each year, and similar to those with HIV infections, most will be released to the community (4). In fact, HCV has become a leading cause of death among prison populations, including the RIDOC (17). In 1997, a Brown/RIDOC team of physicians initiated on-site HCV care for inmates serving at least 18 months, when the number of patients exceeded the capacity of the system to provide

off-site subspecialty evaluation. Our published data demonstrate that such patients can be successfully stabilized with regard to addiction and psychiatric illness, and treated for HCV with outcomes comparable to those in the community [17]. Incarceration is an opportunity for many patients who face barriers to HCV treatment in the community due to psychiatric illness, addiction and/or lack of health insurance, to access HCV care.

The vast majority of HCV-infected inmates are incarcerated for one year or less, which is too short a time for HCV evaluation and treatment completion. Brown faculty recently initiated a study to determine whether reentry linkages to community addiction, mental health, medical and social services can facilitate the antiviral treatment of HCV-infected inmates whose shorter sentences do not permit HCV treatment completion in prison. This HCV treatment program bridges imprisonment and community reentry.

Rhode Island is a small state whose small size and limited number of health care providers has made it relatively easy to bridge the different worlds of the Alpert Medical School and the state correctional system. A similar partnership resulted in dramatically improved health care within the Texas Department of Criminal Justice through a partnership with two Texas Medical Schools [5, 18]. These schools assume the responsibility for delivery and oversight of medical care for inmates throughout the state. This is remarkable considering that the Texas Prison System is one of the largest correctional institutions in the world, providing care for more than 150,000 adults in more than 100 facilities. Prior to this collaboration, medical care was largely fragmented. Under the leadership of the University of Texas Medical Branch and Texas Tech Health Sciences Center, Texas correctional health care developed a managed care model which targeted both the process of health care delivery and the actual quality of care. Staffing levels were increased with the development of appropriate guidelines, which were evaluated on an ongoing basis. This collaboration in conjunction with increased resources resulted in extraordinary improvements in health, including reductions in AIDS-related deaths from 1.5 deaths in 1,000 in 1995 to 0.24 deaths per 1,000 in 2002. The rate of asthma-related deaths also declined in this same period from 3.3 deaths per 100,000 to 0 in 2002. Improvements in glucose control among diabetics as well as treatment of hypertension and cholesterol were similarly noted. The key to the success was the use of disease management guidelines, ongoing education, a common formulary, use of chronic care clinics, and the implementation of electronic medical records. Ongoing evaluation and feedback was provided. This could not

TABLE 1
Recommendations for Screening Management and Prevention of Infectious Diseases in Jails and Prisons

- Routine Screening for HIV among all entrants and linkage to comprehensive care.
- Routine Screening in jails for gonorrhea, Chlamydia and syphilis with rapid availability of treatment.
- Influenza, pneumococcal hepatitis A and B vaccinations per ACIP guidelines.
- Vaccination of women under the age of 26 years old for HPV.
- Hepatitis C treatment evaluation for individuals sentenced for more than one year.
- Routine PPD evaluation for latent TB infection and clinical algorithms to screen for active pulmonary TB for all inmates and staff in jails and prisons

have been done without a dynamic evolving partnership between the academic medical communities and the correctional facilities within the state [18].

FUTURE DIRECTIONS

Improvements in HIV care through routine HIV testing and provision of state of the art treatment can be applied to other infectious diseases, such as STIs, and hepatitis B and C (Table 1). Improvements in the care of chronic illnesses such as diabetes, hypertension and asthma observed in the Texas system can also be applied to other chronic medical illnesses, such as substance use and mental illness, (although they may be harder to treat). The implementation of effective interventions is often hampered by the stigmatization of inmates. Many people ask why we should provide comprehensive medical care to criminals. The answer is that not only is it ethically and legally the right thing to do, but most prisoners (often very quickly), can return to their communities, where their illnesses become the illnesses of the community. The academic medical community has to articulate loudly the benefit to the community of treating illness, particularly infectious disease, during incarceration. This is exemplified by the community benefits of treating STIs during incarceration. In one recent study, universal testing programs for Chlamydia in the San Francisco correctional institutions were shown to be associated with decreased STI rates within the local community [19]. Likewise, there was tremendous community-wide benefit from HBV vaccination directed to inmates [20]. Preventing each case of HBV in this high risk group has the potential of saving thousands of dollars in health care costs and preventing further spread of the disease to sexual partners and other injection drug users. In fact, in Rhode Island, The Miriam Hospital and the RIDOC recently participated in a national pilot project to

TABLE 2
Practical Approaches to Enhanced Linkages Between Academic Medicine and Correctional Medicine

- Develop relationships between correctional administrators and health care providers and academic medical providers to facilitate care and initiate joint programs.
- CME outreach to the correctional health care community.
- Evaluation of focused health care outcomes such as adherence to national practice guidelines.
- Facilitate linkage to care upon release to academically-based medical clinics.
- Availability of elective rotations for medical students, residents and fellows.
- Promote clinical research opportunities for the investigation of the prevention, diagnosis and treatment of medical illness among correctional populations.
- Identify barriers to the development of clinical research within the correctional setting (such as coordination between IRBs or research review committees).

provide Twinrix HAV/HBV combination vaccine for substance users in a variety of settings, including correctional institutions.

CONCLUSION

Academic medicine has excelled through the synergistic relationship of clinical research, care and education. By and large, prisons and jails have not benefitted from this model of excellence in medical care that has been promoted in our academic centers. Academic medical centers can play a leading role in improving health care within jails and prisons. Correctional programs in Rhode Island and other states have served as outstanding models for ongoing projects and clinics for medical students, residents and fellows. Continuing Medical Education (CME) credits are provided within the prison to medical staff in the same way it is provided at other community-based sites. Medical care is evaluated using community-based standards. Clinical research projects have been funded through the NIH and HRSA to develop improved models of HIV testing, medical care and linkage to community-based care after release from prison or jail. This has resulted in a comprehensive HIV care model with subsequent improvements in morbidity and mortality.

This same approach of combined education, clinical research and improved care can be provided for other infectious diseases, such as STIs and viral hepatitis. Improvements in the treatment of substance use and mental illness, both within the correctional setting and upon release into the community, promises to dramatically improve the lives of many ex-inmates. It is through a partnership between academic medicine and correctional health care (Table 2) that we will most likely

develop effective interventions to improve the health of inmates and ex-inmates within the US, which will, in turn, help to curb the spread of infectious diseases in our communities.

ACKNOWLEDGMENTS

This publication resulted (in part) from research supported by a training grant from the National Institute on Drug Abuse (T32DA13911) and This research has been facilitated by the infrastructure and resources provided by the Lifespan/Tufts/Brown Center for AIDS Research, an NIH funded program #P30 AI42853.

REFERENCES

1. Beckwith C, Zaller N, Rich J. Addressing the HIV Epidemic Through Quality Correctional Healthcare. Criminology and Public Policy 2006;5(1):149–56.
2. Sabol WJ, Couture H. Prison Inmates at Midyear 2007 (NCJ Publication No. 221944). Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics (BJS); 2008 June.
3. Flanigan TP, Rich JD, Spaulding A. HIV Care Among Incarcerated Persons: A Missed Opportunity. AIDS 1999;13:2475–6.
4. Hammett TM, Harmon MP, Rhodes W. The Burden of Infectious Disease among Inmates of and Releasees from US Correctional Facilities, 1997; Am J Public Health 2002;92:1789–94.
5. Kendig NE. Correctional Health Care Systems and Collaboration with Academic Medicine. JAMA 2004;292(4):501–3.
6. Maruschak LM. HIV in Prisons and Jails, 2002. Bureau of Justice Statistics Bulletin, US Department of Justice, Office of Justice Programs. NCJ 2004;205333:1–11.
7. Desai AA, Latta ET, Spaulding A, et al. The Importance of Routine HIV Testing in the Incarcerated Poupulation: the Rhode Island Experience. AIDS Educ Prev 2002;14(5 suppl B):45–52.
8. Beckwith CG, Cohen J, Shannon C, et al. HIV Testing Experiences Among Male and Female Inmates in Rhode Island. The AIDS Rader 2007;17:459–64.
9. Beckwith CG, Atunah-Jay S, Cohen J, et al. Feasibility and Acceptability of Rapid HIV Testing in Jail. AIDS Patient Care and STDs 2007;21:41–7.
10. Enhancing Linkages to HIV Primary Care in Jail Settings. Special Projects of National Significance. H97HA08535-01-00.
11. Wright LN, Smith PF, Division of HIV/AIDS Prevention Surveillance and Epidemiology National Center for HIV STD and TB Prevention, CDC. Decrease in AIDS-Related Mortality in State Correctional System-New York, 1995–1998. JAMA 1999;281:506–7.
12. Zaller ND, Holmes L, Dyl AC, et al. Linkage to Treatment and Supportive Services Among HIV-Positive Ex-Offenders in Project Bridge. Journal of Health Care for the Poor and Underserved 2008;19:522–32.
13. Rich JD, Holmes L, Salas C, et al. Successful Linkage of Medical Care and Community Services for HIV-Positive Offenders Being Released from Prison. Journal of Urban Health 2001;78(2):279–89.
14. Flanigan TP, Kim JY, Zierler S, et al. A Prison Release Program for HIV-Positive Women: Linking Them to Health Services and Community Follow-up. Am J Public Health 1996;86:886–7.

15. Skolnick AA. Correctional and Community Health Care Collaborations. J Am Med Assoc 1998;279:98–9.
16. Grinstead O, Seal DW, et al. HIV and STD testing in prisons: perspectives of in-prison service providers. AIDS Educ Prev 2003;15(6):547–60.
17. Allen S, Spaulding A, et al. Treatment of chronic hepatitis C in a state correctional facility. Ann Intern Med 2003;138(3):187–90.
18. Raimer BG, Stobo JD. Health Care Delivery in the Texas Prison System, The Role of Academic Medicine. JAMA 2004;292(4):485–9.
19. Barry PM, Kent CK, et al. "Is Jail Screening Associated with a Decrease in Chlamydia Positivity among Females Seeking Health Services at Community Clinics?-San Francisco, 1997–2004." Sex Transm Dis 2008; (Epub ahead of print).
20. Vallabhaneni S, Macalino GE, et al. Prisoners' attitudes toward Hepatitis B vaccination. Prev Med 2004;38:828–33.

DISCUSSION

Dubose, Winston Salem: Thank you very much for this nice presentation on this important topic. In another life in Texas, I had some experience with the Texas Department of Corrections at the University of Texas and wonder about the prevalence of HIV nephropathy in this population, because it is my impression that it is higher, and also that it is more devastating in terms of loss of kidney function or even mortality. That is question number one. Question number two, another problem that I think needs to be addressed, is the adequate provision of medication for patients within this environment. There are many stories of patients, for example, with kidney transplants or those withHIV in which therapy was not provided as prescribed. It is a significant problem, and it is very costly as well in terms of consequences.

Flanigan, Providence: Absolutely! Thank you. So first off, you are absolutely correct. Over 50% of new HIV infections are in the African American community, and there is a very large disproportionate burden of incarceration among African American men. So it all comes together right there. Also, as you note, hypertension (asymptomatic) is common and these are not individuals that are being followed. This is actually an opportunity to really intervene there. Now what about the care? The care within Corrections goes the whole spectrum from being absolutely terrible to being really state-of-the-art, and part of the reason is that correctional healthcare has really been segregated; and part of that is that it has been segregated by us in Academic Medicine. All of us have jails and prisons that are right where our academic medical centers are, and yet, by in large, if there was a community health center where we saw extremely high rates of say, end-stage renal disease related to HIV and hypertension and HIV nephropathy, that grab bag, and then we would say, "Well we've got to get involved"; but when it occurs in correctional healthcare, because its harder to work there and because of these cultural barriers, we don't participate in that environment in the same way.

Boyer, New Haven: As a hepatologist, I am interested in your data on hepatitis C, particularly because the greatest source of new infections of hepatitis C in the community are prisoners who are released; and I am wondering if you could comment on the general state of treatment for hepatitis C in the prison population?

Flanigan, Providence: As you know, the general state of treatment for individuals with hepatitis C, is poor which as you know, is generally genotype 1A in individuals who are African American and with a history of substance use, injection drug use or cocaine use. The state of treatment in our community is very poor. So within corrections it is even more so. Where do we start? We start by measuring and diagnosing it, and then we

start by saying: "What is one intervention which is very feasible?" which is alcohol reduction; and we know that has direct impact in terms of long-term progression. Beyond that, I think our treatments are going to improve dramatically, and we have got to make sure that we are at least engaged within this setting in order to have an impact.

Boyer, New Haven: Are you treating in Rhode Island?

Flanigan, Providence: We are. It is for individuals that have a lengthy incarceration for more than one year and are engaged in active substance abuse treatment, and with those two, they get combination interferon and Ribavirin.

Johnson, Ponte Vedra: Excellent talk! I've had the chance of speaking with some officials in Russia in the last couple of years, based on some trips under the sponsorship of the American College of Physicians, and I was told by them that in many instances in the Russian prison system that the chances of emerging from prison with either HIV or TB for people who did not have those diseases presumably on entering the system was approaching 50% in some cases. To what extent is being in prison a risk factor for acquisition for, let's say, HIV and TB in Rhode Island?

Flanigan, Providence: Fortunately, we have pretty good TB control in this country, and in Rhode Island, but in most of the world we don't; and where you have a setting of crowding and all those conditions with HIV, the risk of TB and acquisition of TB as well MDR and XDR TB is high. HIV, obviously, is transmitted through sexual contact or needle sharing and that is much less frequent, though it certainly does occur.